

23 September 2018

The Honorable Rebecca B. Smith, Chief Judge
United States District Court
600 Granby Street
Norfolk, VA 23510

Dear Judge Smith,

I have been in further correspondence with Mr. David Alberg and Ms. Jackie Rolleri of NOAA, and Mr. Brian Wainger of RMST regarding our plans to dive adjacent to the wreck of the RMS *Titanic*. They have advised you would like further information on the scientific work we have offered to support at the site of the RMS *Titanic* wreck. The following has been composed with Ms. Lori Johnston, a microbial ecologist with extensive experience in deep water shipwrecks and who wishes to accompany us to the RMS *Titanic* site.

Re: Scientific Research Activities at the wreck of RMS Titanic, 2018

Since the sinking and subsequent discovery of the RMS Titanic, the ship has captivated global attention and continues to do so. In 1996 and 1998, substantial effort was made on behalf of RMSTI to begin examining the wreck of the RMS Titanic from a scientific standpoint, specifically the biological forces that appear to form a significant role in the wreck's deterioration. The research was begun and continues through to the present day by the active participation of Dr. Roy Cullimore and researcher Lori Johnston. This research has been ongoing throughout this time (2001, 2003, 2004, 2005, 2010) with participation in multiple expeditions, including NOAA and RMSTI activity at site.

The Titanic offers a unique opportunity to examine deep ocean science in a virtually untouched environment. Through dedicated long-term experiments on the continued deterioration of the wreck, a more comprehensive understanding of the degradative processes can occur. The current expedition offers a valuable opportunity to assess the wreck site in its current condition, as well as providing the opportunity to continue to conduct scientific observations and gather valuable data from ongoing experiments currently at site.

Historically, all scientific investigations at this site are conducted with extreme diligence and respect as this is not only a grave site, but a valuable part of maritime history. As such all activity has been strictly non-invasive/non-destructive and will continue to be so. As the wreck will continue to deteriorate over time through natural processes, the studies that have been undertaken pose no risk to the wreck itself.



There are two main scientific objectives that the 2018 Expedition to the wreck site could assist the researchers with;

- 1) **The retrieval and subsequent replacement of long-term test platforms.** The test platforms are completely inert and in and of themselves do not pose any threat to the wreck, they act simply as a platform for biological growth that can be measured over time. The placement of the platforms on the ship is in areas that will be the most productive without having to have physical contact with the wreck. (see photographs below).*
- 2) **The recovery of a small rusticle sample (not exceeding 500grams).** The potential sampling of rusticles consists of gathering a small (few hundred grams) of live rusticle from the large, elaborate rusticles found at site. This sampling would not damage the site, the rusticle itself or expose new areas for deterioration to occur. This sampling is important to compare historical types and population of bacteria to present conditions found within the rusticles at site. This also lends itself to the comparison of bacterial populations for recovered experiments.*

In summary, as part of our upcoming voyage to the site of the *RMS Titanic*, EYOS Expeditions seeks to support this ongoing research. In preparation for this I would like to make an addition request to advance the ongoing scientific investigation of the deterioration of the wreck through the above stated activities and limited to only these specific activities. We have already counter-signed the authorization provided by NOAA and have agreed to abide to Special terms and Conditions. We have also agreed to carry a NOAA Observer onboard.

It has been explained to me that the addition of this scientific research to our planned activities would continue to advance and expand the limited knowledge of the deep ocean and its processes at work at this site. We are pleased to have the ability to support this ongoing work should it be permitted.

Yours faithfully,

A handwritten signature in dark ink, appearing to be "Rob McCallum".

Rob McCallum
Expedition Leader, EYOS Expeditions Ltd
rob@eyos-expeditions.com

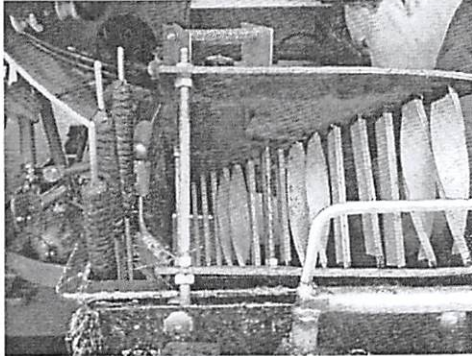


Figure 1 A tray of metallurgical samples recovered by submersible Mir 1. The twisted metal samples represent various metals and ship components after stress (torsion).

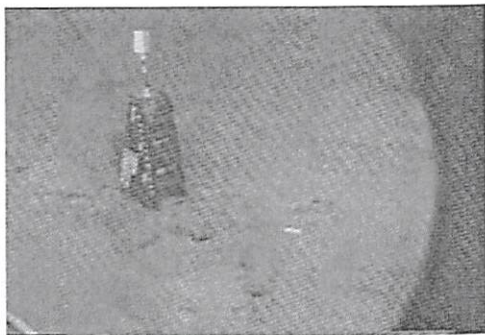


Figure 2 The sample tray 'in situ' (taken through the viewport of Mir 1). The float at the top of the sample allows easier deployment/recovery by a submersible's manipulator.

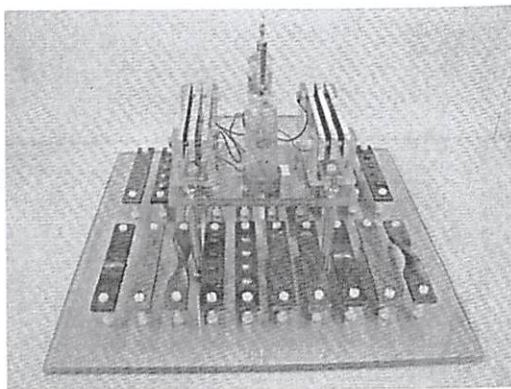


Figure 3. A modern tray of samples showing the various types of metal samples.



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"Manufacturing and Consulting Services for our Environment"

September 7, 2018

Revisiting Titanic 2018

The following information has been requested by NOAA for the potential furthering of scientific knowledge and enhancement of the deterioration of the RMS Titanic.

1. Biography for Lori Johnston

Lori is a microbial ecologist who has worked in various aspects of research and development for over 15 years, including extensive research in electrokinetics, microbial biofouling and rehabilitation methodologies. She has worked in all aspects of R & D, from conception, through the developmental process to commercialization. Lori has also been an active participant in deep ocean studies which include various shipwrecks such as *RMS Titanic*, *DKM Bismarck*, *DKM U166*, *HMHS Britannic*, seven wrecks in the Gulf of Mexico and five Mid Atlantic Ridge hydrothermal vent sites. The collaborative research in the Gulf of Mexico has been recognized twice, once in 2005 with the US Department of the Interior Cooperative Conservation Award, and in 2017 NOPP Excellence in Partnering Award. This award recognizes our success in producing results to advance ocean science and collaboration.

2. The location of the long-term experiments on Titanic, to determine the rates of deterioration is not certain. It has been brought to our attention that at some point in the past 10 years the experiment has been moved from the starboard side of the bow section and placed on the sea floor. It has been suggested that they may be located in front of the bow section but there is nothing to confirm this information.
3. All deep ocean experiments on Titanic have been performed by Dr. Roy Cullimore and Lori Johnston, through Droycon Bioconcepts Inc. All testing apparatus have been designed, constructed and placed by Dr. Cullimore or Lori Johnston, and ongoing research continues with both Dr. Cullimore and Lori Johnston. Droycon Bioconcepts has been involved with deep ocean research and NOAA for many years, including the NOAA Expedition to Titanic and a number of Gulf of Mexico Expeditions.

4. Historically, the methodology of rusticle collection is quite straightforward, yet delicate. Through many experiences collecting rusticles, the most effective means is also non-invasive. The submersible has a manipulator that has the capability to hold an approximately 8-10 inch long mug or stein shaped apparatus. This can then be brought in under a hanging rusticle and carefully brought forward and fracturing the rusticle so that it drops into the apparatus intact. This is then tucked into the sub body or retrieval container to be brought to the surface. At no point during this procedure is the wreck, including the hull or the entire rusticle ever disturbed. As the rusticles are extremely fragile, the slight fracturing of the bottom portion allows the remaining rusticle to continue to endure. If rusticles were to be sampled on the 2018 Expedition, there are a number of areas not of the bow or stern sections, nor artifacts that could be examined. As well, the portion of rusticle required for examination is usually between 100-300grams. Given the delicate nature of rusticles it is very difficult to get larger samples.
5. It is hoped that the long-term experiments that remain on Titanic will glean considerable information on the rate of deterioration of the wreck over time. Due to the difficulty in determining when and where the existing platform has been moved to, and what, if any disturbance to the growths has occurred, it is hoped that significant knowledge will still be able to be obtained. The examining of the experiment will also determine the types of biological activity active at site and be compared to historical data. There are no environmental effects from the placement or retrieval of the platforms as they are designed to be completely non-invasive. The long-term experiments act as a platform in which those organisms naturally occurring on the wreck can migrate to and be active on. The steel and wood samples found on the platforms mimic those steel and wood found on Titanic, so the organisms have already been exposed to these types of surfaces.
6. The scientific methodology and data collected on this expedition will be performed and documented consistent with scientific best practices and would be made available to any interested parties.